

Fig. 1. Upregulated genes after serum withdrawal

Common PC-12/serum Up regulated genes:	Genbank	Description
Cp	L33869; J05424	Ceruloplasmin (ferroxidase)
Adcy6	L01115	Adenylyl cyclase 6
Igf1r	L29232	Insulin-like growth factor 1 receptor
Vegf	M32167	vascular endothelial growth factor
	X15546	Rat mRNA for sucrase isomaltase (EC 3.2.1.10). Serotonin (5- hydroxytryptamine (5HT)) receptor, type 1B
Htr1b	M89954	Fos like antigen 2
Fosl2	U18913	phospholipase C-III; Rat phospholipase C-III mRNA, complete cds.
Plcd1; Plc1	M20637	interleukin 18
Il18	U77776	calcium channel, voltage- dependent, alpha2/delta subunit 1
Cacna2d1	M86621	Vesicle-associated membrane protein (synaptobrevin 2)
Vamp2	M24104; J04827	putative; Rattus norvegicus G protein-coupled receptor (GPR19) gene, partial cds.
GPR19	U65417	This sequence comes from Fig. 1b; A2 adenosine receptor [rats, striatum, mRNA, 2141 nt].
A2 adenosin	S47609	Max interacting protein 1
Mxi1	AF003008	ATPase isoform 2, Na+K+ transporting, beta polypeptide 2
Atp2b2	J03754	Secretory granule neuroendocrine, protein 1 (7B2 protein)
Sgne1	M63901	Pim-1 oncogene
Pim1	X63675	adenylate kinase 3
Ak3	D13062	alpha-methylacyl-CoA racemase
Amacr	Y08172	Inhibitor of DNA binding 2, dominant negative helix-loop- helix protein
Id2	D10863	Rattus norvegicus mRNA for 20-alpha-hydroxysteroid dehydrogenase (20-alpha- HSD), complete cds
LOC171516	L32601	

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Tlp1	U89282	telomerase protein component 1
Pdk1	L22294	pyruvate dehydrogenase kinase, isoenzyme 1
Slc4a2	J05166	Solute carrier family 4, member 2, anion exchange protein 2
Pla2g2c	U07798	phospholipase A2, group IIC
Stx3a	L20820	syntaxin 3
interleukin 4	X69903	Rattus norvegicus mRNA for interleukin-4 receptor (soluble form), complete cds
Ptpns1	D85183	Protein tyrosine phosphatase, non-receptor type substrate 1 (SHP substrate 1)
Btg2	M60921	B-cell translocation gene 2, anti-proliferative
Acadvl	D30647	Acyl-CoA dehydrogenase, Very long chain
Clu	M64723	Clusterin
Stx4a	L20821	syntaxin 4
Npr1	M74535	Natriuretic peptide receptor A/Guanylate cyclase A
Matk	L34542	megakaryocyte-associated tyrosine kinase
Psen2	AB004454	presenilin-2
Pla2g6	U51898	phospholipase A2, group VI
Pnliprp2	L09216	pancreatic lipase-related protein 2
Plcb3	M99567	phospholipase C, beta 3
Plcg1	J03806	Phospholipase C, gamma 1
Efnb1	U07560	Ephrin B1
Rb2	D55627	Retinoblastoma-related gene
Prkce; Pkce	M18331	protein kinase C epsilon subspecies; Rat protein kinase C epsilon subspecies.
Sca1	X91619	Spinocerebellar ataxia type 1
Pla2g5	U03763	phospholipase A2, group V
Ace	U03734	Angiotensin I-converting enzyme (Dipeptidyl carboxypeptidase 1)
Sts	U37138	Steroid sulfatase
Prkcz; Pkcz	M18332	protein kinase C zeta subspecies; Rat protein kinase C zeta subspecies.

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Cacna1a	M64373	Calcium channel alpha 1A carcinoembryonic antigen- related cell adhesion molecule
Ceacam1	M92848	amphiphysin
Amph1	Y13381	Rat glutathione S- transferase mRNA, complete cds
Mgst1	J03752	Cathepsin L
Ctsl	Y00697	Acyl Coenzyme A dehydrogenase, long chain
Acadl	J05029	ATP-binding cassette, sub- family B (MDR/TAP), member 1 (P- glycoprotein/multidrug resistance 1)
Abcb1	M81855	c-fos protein (AA 1-380); Rat c-fos mRNA.
	X06769	
Gria2	M85035	glutamate receptor, ionotropic, AMPA2 (alpha 2)
Stx6	U56815	syntaxin 6
Dpp6	M76426	dipeptidylpeptidase 6
		G protein-coupled receptor kinase 2, groucho gene related (Drosophila)
Gprk2l	X97568	Max
Max	D14447	protein kinase C alpha (AA 1- 672); Rat mRNA for protein kinase C alpha.
Prkca; Pkca	X07286	fatty acid amide hydrolase
Faah	U72497	Carnitine palmitoyltransferase 1 alpha, liver isoform
Cpt1a	L07736	calcium channel, voltage- dependent, L type, alpha 1D subunit
Cacna1d	M92905	
LOC60660	D38260	BRbeta B-regulatory subunit of protein phosphatase 2A
Scg2	M93669	Secretogranin II transmembrane receptor
Unc5h2	U87306	Unc5H2 potassium inwardly-rectifying channel, subfamily J, member 12
Kcnj12	X78461	Acetylcholine receptor beta
Chrnbl	X74833	B-cell translocation gene 1, anti-proliferative
Btg1	L26268	Lectin, galactose binding, soluble 9 (Galectin-9)
Lgals9	U67958	Insulin receptor
Insr	M29014	

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Syt5	U26402	synaptotagmin 5 Rattus norvegicus calcium/calmodulin- dependent protein kinase II delta subunit mRNA, partial cds.
Camk2d; CA	L13408	
Hmg1	M64986	High mobility group 1 thyroid hormone receptor alpha
Thra1	X12744	Rattus norvegicus cytochrome P450 4F5 (CYP4F5) mRNA, complete cds
CYP4F5	U39207	Insulin-like growth factor 2 receptor
Igf2r	U59809	Rat glucagon receptor mRNA, complete cds
Gcgr	L04796	Arrestin, beta 1
Arrb1	M91589	protease (prosome, macropain) 26S subunit, ATPase 1
Psmc1	D50696	R.rattus mRNA for NPY-1 receptor.
Npy1r; NPY-	Z11504	
	AB005541	kinase domain is 450..1295; Rattus rattus mRNA for PCTAIRE3, complete cds.

Fig. 2. Down-regulated genes after serum withdrawal.

Down regulated genes:

Chrna5	J05231	Acetylcholine receptor alpha 5
Ngfr	X05137	Nerve growth factor receptor, fast
RBP-6	M69055	Rat insulin-like growth factor binding protein (rIGFBP-6) mRNA, complete cds.
Tgfb1	L26110	transforming growth factor, beta receptor I
Slc6a6	M96601	taurine/beta-alanine transporter
Psmb3	D21800	Rat mRNA for proteasome subunit RC10-II, complete cds.
Chrna7	L31619; M85273	C holinergic receptor, nicotinic, alpha polypeptide 7 (neuronal nicotinic acetylcholine receptor alpha 7) (bungarotoxin alpha)
Pfkfb4	M64797	6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 4
Hrmt1l2	U60882	heterogeneous nuclear ribonucleoproteins methyltransferase-like 2 (S. cerevisiae)
Gpx5; GP)	X62404; S41829	R.rattus mRNA for epididymal secretory glutathione peroxidase.
Mmp14	X83537	matrix metalloproteinase 14, membrane-inserted
Creb1	X14788	cAMP response element binding protein
Slc2a3	U17978	Solute carrier family 2 A3 (neuron glucose transporter)
Atp1a1	M28647	ATPase, Na+K+ transporting, alpha 1 polypeptide
Fyn	U35365	Fyn proto-oncogene
Pkia	L02615	protein kinase inhibitor, alpha
GTA	L24388	Rattus norvegicus galactosyltransferase associated kinase (GTA) mRNA, complete cds
Egr1	M18416; J04154	Early growth response 1
Gstp	X02904	Glutathione-S-transferase, placental enzyme pi type
Neo1	U68726	neogenin
Atp5g1	D13123	ATP synthase, H+ transporting, mitochondrial F0 complex, subunit c (subunit 9), isoform 1
	S73557	36 kDa calcium-dependent phospholipid-binding protein; This sequence comes from Fig. 1; conceptual translation differs that in published reference; calpactin 1; annexin II=36 kDa calcium-dependent phospholipid-binding protein [rats, RBL-2H3 basophilic leukemia cells, mRNA, 1362 nt].

Fig. 2. Down-regulated genes after serum withdrawal.

Raf1	M15427	Murine leukemia viral (v-raf-1) oncogene homolog 1 (3611-MSV)
Id1	D10862	Inhibitor of DNA binding 1, helix-loop-helix protein (splice variation)
	D28753 + D28754	alternative splicing: see also D28754; Rat mRNA for cyclin dependent kinase 2-alpha.
Ywhaz	D17615	Tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, zeta polypeptide
Slc25a5	D12771	Solute carrier family 25, member 5 (adenine nucleotid translocator 2, fibroblast isoform (ATP-ADP carrier protein))
Ddc	M27716	Dopa decarboxylase (aromatic L-amino acid decarboxylase)
Cdh22	D83349	cadherin 22
Tk1	M22642	Rat thymidine kinase mRNA, 5' end.
Slc18a1	M97380	Solute carrier family18 (vesicular monoamine) member 1 (chromaffin granule amine transporter)
Mapk6	M64301	mitogen-activated protein kinase 6
CAK1	X83579	R.norvegicus mRNA for Cdk-activating kinase
Arf2	L12381	ADP-ribosylation factor 2
Msh2	X93591	mismatch repair protein
Cd24	U49062	CD24 antigen
Gclm	L22191	glutamate-cysteine ligase , modifier subunit
Pdlim1	U23769	PDZ and LIM domain 1 (elfin)
Csnk2b	L15619	casein kinase II beta subunit
Id3	D10864	Inhibitor of DNA binding 3, dominant negative helix-loop-helix protein
Fabp5	U13253	Rattus norvegicus Sprague-Dawley lipid-binding protein mRNA, complete cds
Ccnd1	D14014	Rat mRNA for cyclin D1, complete cds.
Pcna	Y00047	Proliferating cell nuclear antigen
Bmp2	Z25868	bone morphogenetic protein 2
Vgf	M60525	VGF nerve growth factor inducible activity regulated cytoskeletal-associated protein
Arc	U19866	
Fos1	M19651	Fos-like antigen 1

Fig. 3. Upregulated genes after NGF withdrawal.

Common	Genbank	Description
Up regulated genes		
RL/IF-1	X63594	R.rattus RL/IF-1 mRNA.
Arrb2	M91590	Arrestin, beta 2
Vegf	M32167	vascular endothelial growth factor
Rab3a	X06889	Ras-related small GTP binding protein 3A
Adcy6	L01115	Adenylyl cyclase 6
Limk2	D31874	LIM motif-containing protein kinase 2
A2		This sequence comes from Fig. 1b; A2
adenosine receptor	S47609	adenosine receptor [rats, striatum, mRNA, 2141 nt].
Adrbk2	M87855	Adrenergic receptor kinase, beta 2 (G-protein-linked receptor kinase)
Arrb1	M91589	Arrestin, beta 1
Edg5	U10699	endothelial differentiation, sphingolipid G-protein-coupled receptor, 5
Nr4a1	U17254	immediate early gene transcription factor NGFI-B
Kcnj12	X78461	potassium inwardly-rectifying channel, subfamily J, member 12
Camk2d; CAMK1; Camki; RATCAMKI II18 Mxi1	L13408 U77776 AF003008	Rattus norvegicus calcium/calmodulin-dependent protein kinase II delta subunit mRNA, partial cds. interleukin 18 Max interacting protein 1
Ptgfrn	U26595	prostaglandin F2 receptor negative regulator
LOC60660	D38260	BRbeta B-regulatory subunit of protein phosphatase 2A
Ptpns1	D85183	Protein tyrosine phosphatase, non-receptor type substrate 1 (SHP substrate 1) Rattus norvegicus insulin-regulated membrane aminopeptidase IRAP mRNA, complete cds
Vp165	U32990 L33869;	
Cp	J05424	Ceruloplasmin (ferroxidase)
Cdk5	L02121	cyclin-dependent kinase 5
Adrbk1	M87854	adrenergic receptor kinase, beta 1
Madh1	U66478	MAD (mothers against decapentaplegic, Drosophila) homolog 1
	L24907+ L26288	CamK I; calcium/calmodulin-dependent protein kinase type I + CaM-like protein kinase
Cacna1a	M64373	Calcium channel alpha 1A
Pfkm	U25651	phosphofructokinase, muscle
Rpa2	X98490	p32-subunit of replication protein A

Fig. 3. Upregulated genes after NGF withdrawal.

JAK1	AJ000556	Rattus norvegicus mRNA for Janus protein tyrosine kinase 1, JAK1.
RBP-6	M69055	Rat insulin-like growth factor binding protein (rIGFBP-6) mRNA, complete cds.
Ddr1	L26525	Discoidin domain receptor (neurotrophic tyrosine kinase, receptor, type 4 (cell adhesion kinase))
Igf1r	L29232	Insulin-like growth factor 1 receptor
Tp53	X13058	Tumor protein p53 (Li-Fraumeni syndrome)
Pla2g6	U51898	phospholipase A2, group VI
Slc2a5	D13871	solute carrier family 2 (facilitated glucose transporter), member 5
Id2	D10863	Inhibitor of DNA binding 2, dominant negative helix-loop-helix protein
Psme1	D45249	Rat mRNA for proteasome activator rPA28 subunit alpha, complete cds.
Ptpa	L01702	Protein tyrosine phosphatase, receptor type, A
Rnpep	U61696	aminopeptidase B
Ccnd1	D14014	Rat mRNA for cyclin D1, complete cds.
Stx5a	L20822	syntaxin 5a
Npr1	M74535	Natriuretic peptide receptor A/Guanylate cyclase A
Tr4	L27513	TR4 orphan receptor
Galr2	U94322	galanin receptor 2
Csnk2a1	L15618	casein kinase II, alpha 1 polypeptide
Ceacam1	M92848	carcinoembryonic antigen-related cell adhesion molecule
Ptprr	D64050	protein tyrosine phosphatase, receptor type, R
Nf1	D45201	Neurofibromatosis type 1
Mgst1	J03752	Rat glutathione S-transferase mRNA, complete cds
Cacna1d	M92905	calcium channel, voltage-dependent, L type, alpha 1D subunit
Chrna3	L31621	Acetylcholine receptor alpha 3 (neuronal nicotine)
Mapk3	M61177	mitogen activated protein kinase 3
Msh2	X93591	mismatch repair protein
Timp2	L31884	tissue inhibitor of metalloproteinase 2
Slc4a2	J05166	Solute carrier family 4, member 2, anion exchange protein 2
	X55986	Rat mRNA for multicatalytic proteionase (MCP) subunit L ingensin, Atp-dependent proteinase, proteasome, macropain).
Jak2	U13396	Janus kinase 2 (a protein tyrosine kinase) kinase domain is 450..1295; Rattus rattus
	AB005541	mRNA for PCTAIRE3, complete cds.

Fig. 3. Upregulated genes after NGF withdrawal.

Na ⁺ /Cl ⁻ -dependent neurotransmitter transporter	S68944	This sequence comes from Fig. 1; Na ⁺ /Cl ⁻ -dependent neurotransmitter transporter [rats, brain, mRNA, 3762 nt].
		Set beta isoform; leukemogenesis protein; This sequence comes from Fig. 1 IIB;
set	S68987;	set=Set beta isoform {alternatively spliced}
Syn2	S68989	[rats, neonatal kidney, mRNA, 2026 nt].
Calm3	M27925	synapsin II
	X13817	Calmodulin III
class alpha glutathione transferase subunit 8, class alpha glutathione transferase 8		
8, GST 8-8, GST K	X62660;	subunit 8; R.rattus mRNA for glutathione transferase subunit 8.
	S37370	Rattus norvegicus neuron-specific enolase (NSE) mRNA, complete cds
NSE	AF019973	syntaxin 3
Stx3a	L20820	Tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, eta polypeptide
Ywhah	D17445	Carnitine palmitoyltransferase 1 alpha, liver isoform
Cpt1a	L07736	Superoxide dismutase 1, soluble
Sod1	Y00404	phospholipase C, beta 3
Plcb3	M99567	Angiotensin I-converting enzyme (Dipeptidyl carboxypeptidase 1)
Ace	U03734	
	X06769	c-fos protein (AA 1-380); Rat c-fos mRNA.
Unc5h2	U87306	transmembrane receptor Unc5H2
Rab14	M83680	GTPase Rab14
		ATP-binding cassette, sub-family C (CFTR/MRP), member 1 (multiple drug resistance-associated protein)
Abcc1	X96394	Inhibitor of DNA binding 1, helix-loop-helix protein (splice variation)
Id1	D10862	dipeptidylpeptidase 6
Dpp6	M76426	

Fig. 4. Down-regulated genes after NGF withdrawal.

Down
regulated
genes

Ccng1	X70871	Cyclin G1
Slc6a6	M96601	taurine/beta-alanine transporter
Vamp2	M24105	Vesicle-associated membrane protein (synaptobrevin 2)
Jup	U58858	unction plakoglobin
Id3	D10864	Inhibitor of DNA binding 3, dominant negative helix-loop-helix protein
Hsp27	M86389	Heat shock 27 kDa protein
Slc18a1	M97380	Solute carrier family18 (vesicular monoamine) member 1 (chromaffin granule amine transporter)
Mapk6	M64301	mitogen-activated protein kinase 6
Il6st	M92340	Interleukin 6 signal transducer
Syp	X06655	Synaptophysin
Lxn	U40260	latexin
Ngfr	X05137	Nerve growth factor receptor, fast
		36 kDa calcium-dependent phospholipid-binding protein; This sequence comes from Fig. 1; conceptual translation differs that in published reference; calpactin 1; annexin II=36 kDa calcium-dependent phospholipid-binding protein [rats, RBL-2H3 basophilic leukemia cells, mRNA, 1362 nt].
	S73557	transcription factor AP-1 (AA 1-334); Rat c-jun oncogene mRNA for
Jun	X17163	transcription factor AP-1.
Btg1	L26268	B-cell translocation gene 1, anti-proliferative
	V01252;	
Cga	J00757	glycoprotein hormones, alpha subunit
Apc	D38629	Adenomatosis polyposis coli
jun-D	D26307	Rattus norvegicus jun-D gene, complete cds
	Z27118	R.rattus mRNA for heat shock protein 70.
Slc30a1	U17133	solute carrier family 30 (zinc transporter), member 1
Ctsl	Y00697	Cathepsin L
Elf5	L11651	eukaryotic initiation factor 5 (eIF-5)
Hmgcs1	X52625	3-hydroxy-3-methylglutaryl-Coenzyme A synthase 1
Csrp3	X81193	cysteine-rich protein 3
Slc7a1	U70476;	Solute carrier family 7 member A1 (amino acid transporter cationic 1)
Cyp51	U17697	Cytochrom P450 Lanosterol 14 alpha-demethylase
Bin1	Y13380	myc box dependent interacting protein 1
Plec1	X59601	plectin
Atp2b1	J03753	ATPase, Ca++ transporting, plasma membrane 1

Fig. 4. Down-regulated genes after NGF withdrawal.

Fabp5	U13253	Rattus norvegicus Sprague-Dawley lipid-binding protein mRNA, complete cds
Cdkn1a	L41275	cyclin-dependent kinase inhibitor 1A (P21)
	M21730	
Anx5	J03898;	Annexin V
Bmp2	Z25868	bone morphogenetic protein 2
Pfkfb4	M64797	6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 4
Tnfr1	M63122	Tumor necrosis factor receptor superfamily, member 1a
Vil2	X67788	ezrin
Pim1	X63675	Pim-1 oncogene
Fosl2	U18913	Fos like antigen 2
Btg2	M60921	B-cell translocation gene 2, anti-proliferative
Rin1	U80076	Rattus norvegicus RIN1 mRNA, complete cds
Slc2a1	M13979	Rat brain glucose-transporter protein mRNA, complete cds
Junb	X54686	jun B proto-oncogene
Vgf	M60525	VGF nerve growth factor inducible
Il2rb	M55050	Interleukin 2 receptor, beta chain
Egr1	M18416;	Early growth response 1
	X13722	Rat mRNA for LDL-receptor
		Rat mRNA for 53 kD polypeptide induced by growth factors (EGF) and
Mmp3	X02601	oncogenes (H-ras; src; polyoma middle T)
	AF00778	
uPAR-2	9 +	urinary plasminogen activator receptor 2
34A	M65253	Rat transformation-associated protein (34A) mRNA, complete cds
		serine (or cysteine) proteinase inhibitor, clade E (nexin, plasminogen
Serpine1	M24067	activator inhibitor type 1), member 1
Fosl1	M19651	Fos-like antigen 1
Arc	U19866	activity regulated cytoskeletal-associated protein